A revision of *Rubus* subg. *Idaeobatus* (Focke) Focke (Rosaceae) in Australia

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Summary

Bean, A.R. (1997). A Revision of *Rubus* subg. *Idaeobatus* (Focke) Focke (Rosaceae) in Australia. *Austrobaileya* 4(4): 677–689. *Rubus* subg. *Idaeobatus* is revised for Australia. Five species, including one with two varieties are recognised; *Rubus queenslandicus* A.R.Bean sp. nov., *R. probus* L.H.Bailey, *R. rosifolius* Sm. var. *rosifolius*, *R. rosifolius* var. *commersonii* (Poir.) Tirveng., *R. ellipticus* Sm. and *R. parvifolius* L. All taxa are described in full and their distributions mapped. *R. queenslandicus* is illustrated. A key to the Australian taxa is presented.

Keywords: taxonomy, Rosaceae, *Rubus*, Australian flora, *Rubus* subg. *Idaeobatus, Rubus queenslandicus, Rubus probus, Rubus rosifolius, Rubus rosifolius* var. *commersonii, Rubus ellipticus, Rubus parvifolius.*

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Introduction

Rubus subg. *Idaeobatus* (Focke) Focke is one of four subgenera indigenous to Australia (Bean 1995). Its members are characterised by their shrubby habit, trifoliolate or imparipinnate leaves (some non-Australian species are bipinnate) with persistent stipules adnate to the petiole. Many species have sessile or stalked glands on various parts of the plant.

The subgenus has a broad distribution centred on continental Asia where the greatest species diversity occurs. In addition, representatives occur in Malesia, Africa and Central America, and one species, *R. idaeus* L., occurs in Europe. Australia has four indigenous species, one with two varieties, plus one introduced species belonging to this subgenus.

Rubus parvifolius was one of several species of *Rubus* described by Linnaeus in 1753, based on a specimen originating in southern China.

R. rosifolius Sm. was described by J.E. Smith in 1791 from specimens collected in Mauritius, and soon after was collected from Australia by Robert Brown and others.

A third Australian representative of *Rubus* subg. *Idaeobatus, R. muelleri* F.M.Bailey, was described by Bailey (1884), who compared it with *R. rosifolius*. However, in recent years *R. muelleri* has been included within the Malesian species *R. fraxinifolius* Poir. (Stanley & Ross 1983; Henderson 1994). In the present study, it is shown that these two taxa are specifically distinct. Unfortunately the name *R. muelleri* F.M.Bailey is illegitimate so is replaced here by the next available name, *R. probus* L.H.Bailey.

Collections of *R. queenslandicus* A.R.Bean have previously been identified as *R. rosifolius, R. fraxinifolius* or *R. muelleri (= R. probus*), but it is distinct from all of these species.

R. rosifolius var. *commersonii* (Poir) Tirveng. is newly recognised for Australia here. It is apparently sporadically distributed throughout the range of *R. rosifolius.*

The naturalised species, *R. ellipticus* Sm., is confined to south-eastern Queensland and north-eastern New South Wales.

R. idaeus L. and *R. phoenicolasius* Maxim. were listed by Ewart (1931) as being naturalised in Victoria. However, there is only one specimen of *R. idaeus* at MEL, collected in 1925, and

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there are no specimens of *R. phoenicolasius* at MEL. As there is no other evidence that either species is currently naturalised in Australia, they are not included in this treatment.

Materials and Methods

This study is based on herbarium material of Australian and non-Australian taxa from AD, BH, BRI, HO, MEL, NE, NSW, P, QRS, TI and UPRRP. In addition, microfiche of type specimens in LINN and P-JU have been seen. Most species have been examined in the field to establish ecological requirements and to collect spirit material for later study. Measurements of vegetative parts are based on herbarium material, while floral and fruiting measurements are based on spirit material or reconstituted dried specimens.

Taxonomy

Rubus subg. *Idaeobatus* (Focke) Focke, Biblioth. Bot. 72: 128 (1911); *Rubus* sect. *Idaeobatus* Focke, Abh. Naturwiss. Vereine Bremen 4: 147 (1874). **Type:** *R. idaeus* L.

c. 75 species in the world, 5 spp. indigenous or naturalised in Australia

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Key to Australian taxa of *Rubus* subg. *Idaeobatus*

1. Leaflets white or yellowish underneath, due to dense cover of short hairs obscuring the leaflet surface 2
   Leaflets green underneath, glabrous or hairy, surface of leaflets not obscured by hairs 3

2. Branchlets with erect, reddish hairs; leaflets not lobed; petals white; fruits yellow . . . . **4. R. ellipticus**
   Branchlets with appressed, white hairs; leaflets usually lobed; petals pink or red; fruits red . . . . **5. R. parvifolius**

3. Branchlets glabrous; leaflets glabrous, or sparsely hairy on veins 4
   Branchlets hairy; leaflets uniformly hairy throughout 5

4. Most carpels glandular; leaflets 14–27 mm wide; petals hairy on both surfaces . . . . **3. R. queenslandicus**
   No carpels glandular; leaflets 20–48 mm wide; petals glabrous on inner surface . . . . **1. R. probus**

5. Flowers with 5 petals . . . . **2a. R. rosifolius** var. **rosifolius**
   Flowers with 9–13 petals . . . . **2b. R. rosifolius** var. **commersonii**

1. Rubus probus L.H.Bailey, Gentes Herb. 1(4): 150 (1923). **Type:** cultivated at Rio Piedras, Porto Rico [Puerto Rico], undated, *J. Griffith* s.n. (holo: BH).

Rubus muelleri F.M.Bailey, Proc. Roy. Soc. Queensland 1: 9 (1884), **nom. illeg.,** non Lefevre (1859). **Type:** Queensland. MORETON DISTRICT: near waterfalls, Helidon, undated, *F.M. Bailey* s.n. (holo: BRI; iso: MEL).

Illustrations: S. & A. Pearson, Pl. of Central Queensl., p. 356 (1989) as *R. fraxinofolius* (sic); H. Dick, Aust. Plants 18: 76 (1995) as *R. rosifolius.*

Erect shrubs, sometimes semi-scandent, up to 3 m high. Stems glabrous, with stout, curved to almost straight prickles to 4 mm long. Leaves of mature stems up to 120 mm long, imparipinnate, with 5 or 7 (rarely 9) leaflets on canes, but with unifoliolate or trifoliolate leaves adjacent to inflorescences. Petioles 30–60 mm long, grooved on upper surface, glabrous, with a few stout prickles. Rachis glabrous except at junction with lateral leaflets. Petiolules of lateral leaflets 1.5–4 mm long, grooved, hairy at base; petiolules of terminal leaflets 8–25 mm long, grooved above, glabrous. Stipules persistent, linear, 7–12 mm long, c. 0.5 mm wide, entire, acute, attached to petiole 2–4 mm above petiole base. Blades of leaflets ovate, 36–95 × 20–48 mm, the terminal leaflet often slightly larger than the lateral ones; glabrous or sometimes with sparse hairs on midrib or throughout lamina; base broadly cuneate or obtuse, sometimes oblique in lateral leaflets; apex acute to acuminate; margins biserrate, with serrations 1.5–3.5 mm deep; glands on abaxial surface sessile, yellow or brown, sparse (65–200/sq. cm). Leaflets penninerved with 7–10 pairs of lateral veins, terminating at a major tooth; venation reticulate, with midrib and lateral veins impressed above, raised below; prickles occasionally present. Inflorescence terminal or in upper leaf axils, up to 110 mm long, with up to 30 flowers. Bracts and bracteoles entire or tripartite, to 9 mm long; segments linear, acute. Pedicels terete, 6–23 mm long, glabrous; sessile glands present. Flower buds deltoid; hypanthia shallowly-convex to almost flat, glabrous, unarmed; sessile glands present. Sepals persistent, deltate, 6–13 × 2.5–4.5 mm, including a 1.5–5.0 mm long acumen, entire, recurved after anthesis, inside with dense white hairs throughout, outside glabrous; prickles absent. Petals 5, deciduous, obovate to orbicular, 7–12 × 5–10 mm, not clawed, sparsely hairy on both surfaces, white. Stamens 100–150, glabrous; filaments up to 4 mm long; anthers c. 0.7 mm long. Carpels 300–500, glabrous or with sparse filamentous hairs, glands absent; ovaries c. 0.4 mm long; styles c. 1.4 mm long. Carpels extending to base of torus, annulus of hairs present at base of torus. Aggregate fruit ellipsoidal to ovoid, 10–15 mm long and 10–17 mm in diameter when dried, c. 17 mm long and 26 mm diameter when fresh; exocarp red at maturity. Endocarpids ellipsoidal, lacunose, c. 1.4 × 1.1 × 1.0 mm.

***Selected specimens*:** **New Guinea**. Strickland River, in 1885, *Baeuerlen* s.n. (BRI). Bougainville. Kupei Gold field, Apr 1930, *Kajewski* 1629 (BRI). **Queensland.** COOK DISTRICT: Mt Lewis road, 28.1 km from Rex Hwy, Aug 1986, *Weston* 773 et al. (BRI, NSW); Swipers Flat, Wooroonooran N.P., Jul 1995, *Forster* PIF 17149 & *Figg* (BRI, MEL); Parish of Jordan, Lower Downey L.A., Sep 1992, *Gray* 5535 (QRS); Mourilyan harbour, E of Innisfail, Sep 1970, *Whiting* s.n. (BRI). NORTH KENNEDY DISTRICT: 6 km W of Paluma, Jul 1992, *Jobson* 1700 et al. (BRI, MEL); Strathdickie near Proserpine, undated, *Michael* s.n. (BRI). SOUTH KENNEDY DISTRICT: Mt McCartney, SF 652 Cawley, Apr 1991, *Forster* PIF8169 & *McDonald* (BRI); Swampy Ridge, W of Eungella township, May 1992, *Bean* 4465 (BRI); East Funnel Creek, between 1st and 2nd road crossings, Sep 1993, *Champion* 865 (BRI). PORT CURTIS DISTRICT: Byfield, near Keppel Bay, Sep 1931, *White* 8210 (BRI); Mt Archer, c. 2 km NE of Rockhampton, Jun 1985, *Anderson* 3998 (BRI); Blackman Gap, 18 km SW of Miriam Vale, May 1976, *Rodd* 3047 & *Jacobs* (BRI, NSW). BURNETT DISTRICT: headwaters of Pine Mountain Creek, N of Monto, Jul 1995, *Bean* 8773 (BRI, MEL, QRS). WIDE BAY DISTRICT: upper reaches of Broken Ck, SE of Builyan, Sep 1995, *Bean* 8943 & *Robins* (BRI, MEL); Imbil, Dec 1958, *Curtis* 3 (BRI). MORETON DISTRICT: Whitecross property, Camp Flat road, Bli Bli, Aug 1994, *Bean* 7782 (BRI); Palmwoods, May 1907, *White* s.n. (BRI); near Vinegar Hill, 14 km NE of Helidon, Aug 1995, *Bean* 8887 (BRI, MEL).**Puerto Rico:** Toro Negro Forest Reserve, Rt 143, Mar 1992, *Axelrod* 4278 & *Chavez* (UPRRP); Mpio. de Ponce, rte 143 at Cerro de la Punta, May 1988, *Taylor* 8112 (UPRRP).

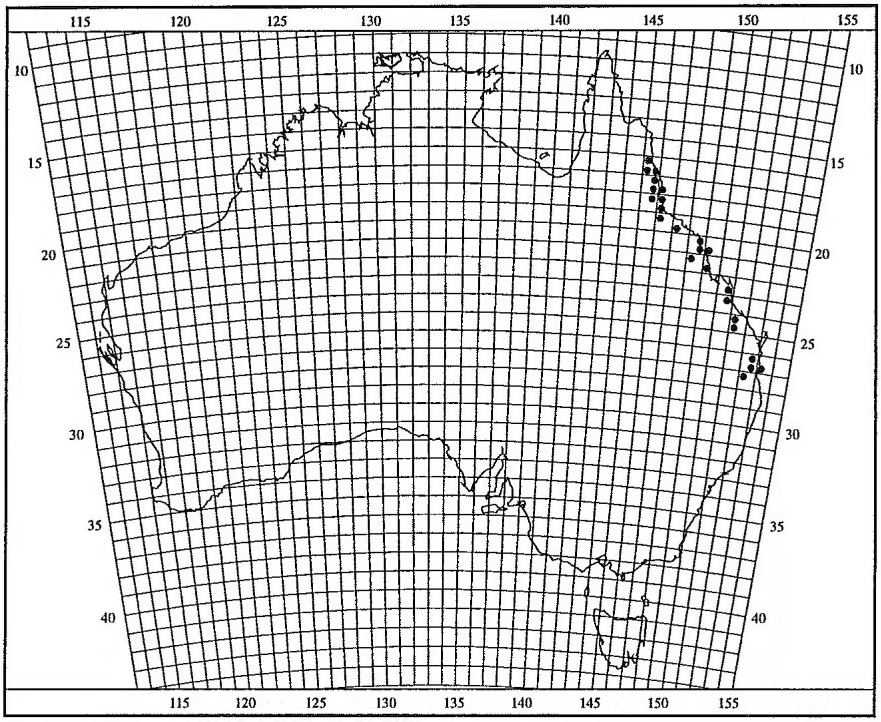
***Distribution and habitat*:** *R. probus* is widely but discontinuously distributed in coastal areas of Queensland extending from Mt Lewis (16°30'S) in the north, to Helidon (27°30'S) in the south (**Map 1**). It is also newly recorded here for New Guinea and Bougainville. *R. probus* is naturalised in high altitude areas of Puerto Rico (Axelrod pers. comm.).

In Australia it inhabits rainforest margins and clearings or shady gullies in dense eucalypt forest on fertile soils. In southern Queensland, altitudes range from 0–550 metres, while in north Queensland they range from 160–1100 metres.

***Phenology*:** Flowers and fruits have been recorded between April and December.

***Affinities*:** *R. probus* is most closely related to *R. fraxinifolius* Poir. from Malesia, but differs from that by its leaflets with 7–10 pairs of lateral veins (10–15 for *R. fraxinifolius*), biserrate leaflet margins (serrate for *R. fraxinifolius*), and petals with sparse hairs (glabrous for *R. fraxinifolius*).

R. probus differs from *R. rosifolius* by its larger stature, non-glandular carpels (glandular in *R. rosifolius*); leaflets 20–48 mm wide (9–20



Map 1. Distribution of *Rubus probus.*

mm wide in *R. rosifolius*); leaflet length:breadth ratio 1.8–2.7 :1 (2.5–4:1 in *R. rosifolius*); leaves and stems glabrous (hairy in *R. rosifolius*); and the petiolules of the lateral leaflets 1.5–4 mm long (0–1 mm in *R. rosifolius*).

R. probus differs from *R. chrysogaeus* P.Royen by its non-glandular carpels and leaflets with 7–10 pairs of lateral veins (12–13 pairs for *R. chrysogaeus*) and its distinctly biserrate leaflets.

***Conservation status*:** A common and widespread species.

***Notes*:** The name *'Rubus müllerii'* was validly published by L.V.Lefevre in P.J.Müller's account of European Rubi in 1859, honouring P.J.Müller. According to Article 60 of the International Code of Botanical Nomenclature (Greuter 1994), the ending of the specific epithet must be corrected to *'-i'*, and furthermore, the *'ü'* of the German language is to be transcribed to *'ue'* in Latin epithets, making the correct spelling of the epithet *'muelleri'*. It follows then that *R. muelleri* F.M.Bailey (1884) is a later homonym and therefore an illegitimate name.

The type of *R. probus* was collected in Puerto Rico. Seeds of a *Rubus* taxon were sent there in 1908 by James Pink of Wellington Point, Queensland. Mr Pink, in a letter now lodged at BH, said that these seeds belonged to a plant he developed which, he claimed, was a hybrid between *R. ellipticus* and *R. rosifolius.* However, this is clearly not the case, as the plants subsequently cultivated in Puerto Rico (of which I have examined specimens) are conspecific with the taxon described by F.M. Bailey as *R. muelleri*, and match the type of *R. probus* L.H.Bailey.

Corrie (1907) describes collecting fruits of a wild raspberry from Raspberry Creek, a tributary of Monal Creek, north of Monto in 1906, and bringing the seeds back to Brisbane to be propagated. Corrie later states that the Monal Creek 'variety' was no different from 'Pink's hybrid'. It is possible that the Puerto Rican populations were derived from the Monal Creek provenance.

F.Mueller labelled several specimens of *R. probus* at MEL as '*R. rosifolius* var. *eglandulosus*' but this name was never validly published.

2. Rubus rosifolius Sm., Pl. icon. ined. 3 (1791) t. 60. **Type:** Mauritius, 1769–1773, *P. Commerson* s.n. (holo: LINN (Smith herb. no. 902.63), BRI microfiche).

Rubus eglanteria Tratt., Rosac. monogr. 3: 9 (1823). **Type:** Nova Hollandia, *n.v.*

For additional synonymy of *Rubus rosifolius*, see Zandee & Kalkman (1981).

Erect shrubs, sometimes semi-scandent, up to 1.2 m high. Stems hairy, with stout, curved to almost straight prickles to 5 mm long. Leaves of mature stems up to 160 mm long, imparipinnate, with 5 or 7 leaflets on canes, but with unifoliolate or trifoliolate leaves adjacent to inflorescences. Petioles 15–35 mm long, grooved on upper surface, hairy, with a few stout prickles. Rachis hairy. Petiolules of lateral leaflets 0–1 mm long, grooved, hairy; petiolules of terminal leaflets 5–12 mm long, grooved above, hairy. Stipules persistent, narrowly lanceolate to linear, 5–11 mm long, 0.5–1 mm wide, entire; apex acute, attached to petiole 0–2.5 mm above petiole base. Blades of leaflets lanceolate, 30–65(78) × 9–20(27) mm, the terminal leaflet often larger than the lateral ones; hairy on both surfaces, base broadly cuneate to cordate, sometimes oblique in lateral leaflets; apex acute to acuminate; margins biserrate, with serrations 1–2 mm deep; glands on abaxial surface sessile, yellow or brown, dense (400–800/sq. cm). Leaflets penninerved with 6–14 pairs of lateral veins, terminating at a major tooth; venation reticulate, midrib and lateral veins impressed above, raised below, prickles occasionally present. Inflorescence terminal or in upper leaf axils, up to 60 mm long, with up to 3 flowers. Bracts and bracteoles entire to tripartite, to 8 mm long, segments linear, acute. Pedicels terete, 18–32 mm long, hairy, sessile glands present. Flower buds globular, hypanthia shallowly-convex to almost flat, hairy, unarmed, glands present; sessile. Sepals persistent, deltate, 6–13 × 2.5–4 mm, including a 1.5–6 mm long acumen, entire, recurved after anthesis; inside with dense white hairs throughout, outside sparsely hairy, prickles absent. Petals 5–13, deciduous, elliptical to orbicular, not clawed, 6.5–13 × 7–10 mm, hairy on outer surface, white. Stamens 100–200, glabrous; filaments up to 4 mm long, anthers c. 0.5 mm long. Carpels c. 400, glabrous, glands shortly stalked, 4–10 per carpel; ovaries c. 0.6 mm long, styles c. 1.3 mm long. Carpels extending to base of torus, annulus of hairs present at base of torus. Aggregate fruit ellipsoidal to globose, 13–18 mm long and 11–15 mm in diameter when dried, c. 20 mm long and c. 14 mm in diameter when fresh, exocarp red at maturity. Endocarpids ellipsoidal, lacunose, c. 1.5 × 1.0 × 0.6 mm.

Phenology: Flowers have been recorded from June to December; fruits from July to December.

Notes: The type of *R. rosifolius* was collected at Mauritius, an island in the Indian Ocean. Baker (1877) was clearly of the opinion that *R. rosifolius* was introduced to that island, saying that it 'is established abundantly ...' and that it 'was brought from the Malay Isles by Commerson'.

The type of *Rubus eglanteria* Tratt. is not present at W, nor at BM, FI, G or K. However, from the description given, it appears this name is applicable to *R. rosifolius.*

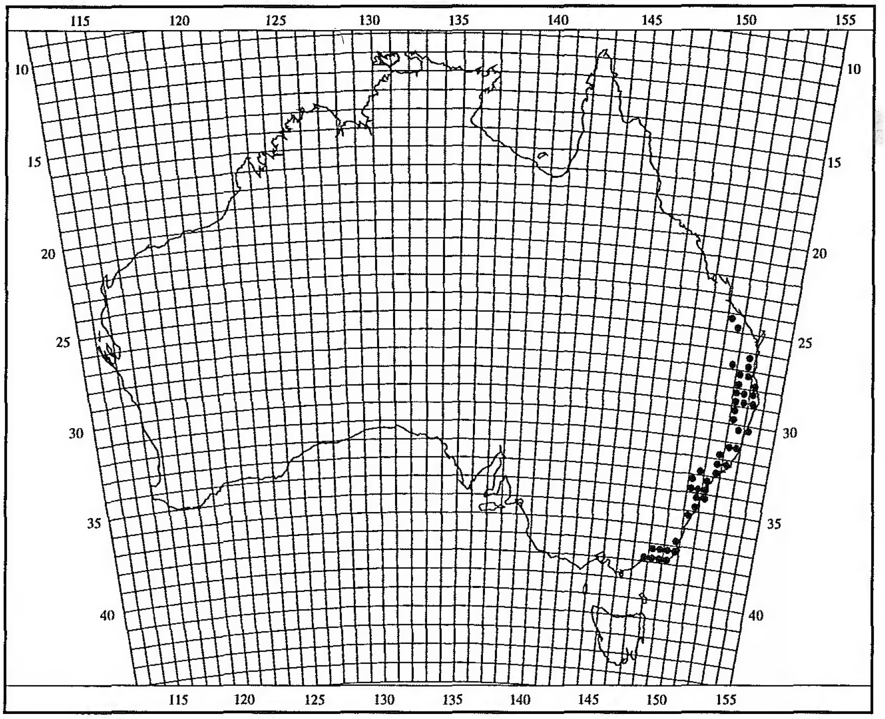
Based on petal numbers in the flowers, two varieties of this species are recognisable in Australia.

2a. Rubus rosifolius Sm. var. rosifolius

Illustration: K.A.W. Williams, Native Pl. of Queensl. 3: 275 (1987).

Petals 5

Selected specimens: **Queensland.** Port Curtis District: SF 218, Kroombit Tops, Jun 1982, *Gibson* 446 (BRI); Bulburin SF, Jul 1959, *Thorne* 22436 & *Tracey* (BRI). Wide Bay District: Imbil, Dec 1958, *Curtis* (BRI); Conondale Range, Sep 1980, *Dillewaard* 162 & *Olsen* (BRI). Darling Downs District: Bunya Mountains, Oct 1919, *White* s.n. (BRI); near Moss Gardens, Aug 1995, *Forster* PIF17429 et al. (BRI, MEL, NSW). Moreton District: Mt Glorious, Nov 1972, *Lebler* & *Durrington* s.n. (BRI, MEL); foothills of Mt Ballow, downstream from Grace's Hut, Dec 1989, *Bean* 1286 (BRI). **New South Wales.** North Coast: Tooloom scrub, 15 mls [24 km] SW of Urbenville, Dec 1965, *Constable* 6647 (BRI, NSW); Gibraltar Range, 48 mls [77 km] from Glen Innes, Aug 1960, *Caichiolo* s.n. (NE). Northern Tablelands: Mt Banda Banda Reserve, 45 km NW of Wauchope in Mt Boss S.F., May 1975, *Coveny* 6374 et al. (NSW). Central Tablelands: Running Stream Creek, c. 3 mls [5 km] ENE of Glen Davis, Sep 1964, *Constable* 5128 (NSW); Mt Wilson, Jan 1982, *Medd* 160348 (NSW); Robertson, Jul



Map 2. Distribution of *Rubus rosifolius* var. *rosifolius*.

1985, *Stiles* s.n. (NE). CENTRAL COAST: Royal N.P., 5 km along Bulli road from Audley turnoff, Oct 1982, *James* 217 & *Parris* (NSW); Kurrajong, adjacent to the Grose R., undated, *Atkinson* 22 (MEL). SOUTH COAST: Tantawangalo SF, McCarthys Ck, Dec 1990, *Crawford* 1242 (CANB, MEL, NSW); Egan Rocks Nature Reserve, Sep 1984, *Albrecht* 882 (MEL, NSW). **Victoria.** Alfred N.P., Nov 1969, *Beauglehole* ACB 32057 & *Finck* (MEL); Kalimna Gully near Lakes Entrance, Aug 1944, *Willis* s.n. (MEL).

***Distribution and habitat*:** *R. rosifolius* var. *rosifolius* is indigenous to many areas of south-east Asia, including Sri Lanka, Cambodia, Taiwan, Borneo and New Guinea. It is also indigenous to south-eastern Australia where it extends from Kroombit Tops (near Gladstone) in central Queensland throughout eastern New South Wales to eastern Victoria (**Map 2**). It grows on rainforest margins or in wet eucalypt forest, often in disturbed areas.

***Conservation status*:** A common and widespread taxon in Australia. No conservation coding is necessary for it.

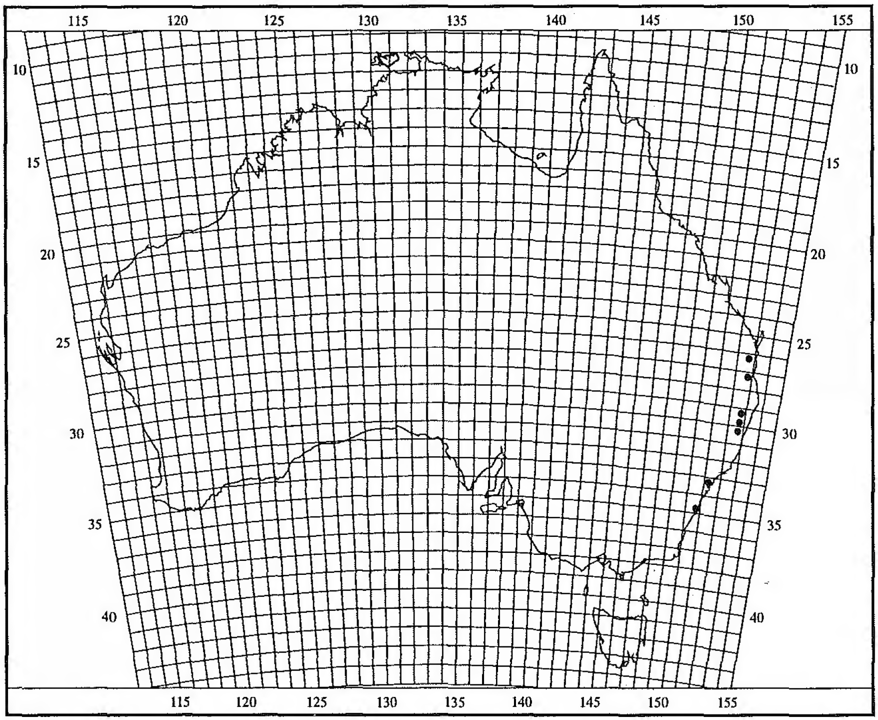
2b. Rubus rosifolius var. **commersonii** (Poir.) Tirveng., Rev. Handb. Fl. Ceylon, 3: 344 (1981); *Rubus commersonii* Poir. in Lam., Encycl. 6: 240 (1804). **Type:** Java, 1766–1769, *P. Commerson* s.n. (holo: P–JU n.v., BRI microfiche).

Illustration: Harden (ed.), Fl. of N.S.W. 1: plate 32 (1990).

Petals 9–13

Selected specimens: **Queensland**. WIDE BAY DISTRICT: Ironstone Creek road, SE of Kandanga, Nov 1993, *Bean* 7048 (BRI). MORETON DISTRICT: Mt Mee Forest Office, 8 km W of Mt Mee, Jul 1995, *Bean* 8766 (BRI); 3 mile scrub, Jul 1874, *Bailey* s.n. (BRI). **New South Wales.** NORTH COAST: east of Gibraltar Range, Apr 1968, *Thomas* s.n. (NE); Clarence River, undated, *Beckler* s.n. (MEL); Hortons Creek, on Grafton-Armidale road, Apr 1994, *Bean* 7662 (BRI, NSW); Bellingen, Aug 1980, *Pearson* s.n. (NSW). CENTRAL COAST: Point Clare, Jun 1897, *Forsyth* s.n. (NSW); Yellow Rock, Jul 1942, *McBarron* 667 (NSW).

***Distribution and habitat*:** *R. rosifolius* var. *commersonii* has a broad but sporadic distribution. Outside Australia, it is recorded for Java, Mauritius, China and Brazil. In Australia, it is known from a few localities from southern Queensland to central New South Wales (**Map 3**). It grows on rainforest margins or in wet eucalypt forest, often in disturbed areas.



Map 3. Distribution of *Rubus rosifolius* var. *commersonii*.

Affinities: *R. rosifolius* var. *commersonii* is distinguished from *R. rosifolius* var. *rosifolius* by its 9–13 petals per flower, compared to 5 petals in the type variety. There appear to be no other differences.

Conservation status: A taxon of sporadic occurrence, but not rare or threatened in Australia. No conservation coding is necessary for it.

3. Rubus queenslandicus A.R.Bean **sp. nov.** affinis *R. rosifolio*, a quo foliis caulibusque glabris, petiolulis foliolorum lateralium longioribus, foliolis omnibus glandes sessiles sparsas ferentibus et petalis utrinque pubescentibus differt. **Typus:** Queensland. COOK DISTRICT: South Mary L.A., S.F. 143, 21 km along Mt Lewis road, 16°32'S 145°16'E, 15 June 1995, *P.I. Forster* PIF16808 (holo: BRI; iso: MEL, NSW, QRS).

Erect shrubs, sometimes semi-scandent, up to 1 m high. Stems glabrous, with stout, curved to almost straight prickles to 3 mm long. Leaves of mature stems up to 155 mm long, imparipinnate, mostly with 5 or 7 leaflets on canes, but with unifoliolate or trifoliolate leaves adjacent to inflorescences. Petioles 24–48 mm long, grooved on upper surface, glabrous, with a few stout prickles. Rachis glabrous, except at junction with lateral leaflets. Petiolules of lateral leaflets 1–3 mm long, grooved, hairy at base; petiolules of terminal leaflets 5–14 mm long, grooved above, glabrous. Stipules persistent, linear, 5–10 mm long, 0.25–0.5 mm wide, entire; apex acute, attached to petiole 1–2.5 mm above petiole base. Blades of leaflets narrowly ovate, 43–80 x 14–27 mm, the terminal leaflet often larger than the lateral ones; glabrous or with sparse hairs, base obtuse, sometimes oblique in lateral leaflets; apex acute to acuminate; margins biserrate or triserrate, with serrations 1.5–3 mm deep; glands on abaxial surface sessile, yellow, sparse (100–200/sq. cm). Leaflets penninerved with 8–9 pairs of lateral veins, terminating at a major tooth; venation reticulate, midrib and lateral veins impressed above, slightly raised below, prickles occasionally present. Inflorescence terminal or in upper leaf axils, up to 90 mm long, with up to 6 flowers. Bracts and bracteoles tripartite, to 3 mm long, segments linear, acute. Pedicels terete, 14–36 mm long, glabrous, sessile glands present or absent. Flower buds deltoid, hypanthia shallowly convex to almost flat, glabrous, unarmed, sessile glands present. Sepals persistent, deltate, 6–11 × 2–3.5 mm, including a 1.5–6 mm long acumen, entire, recurved after anthesis; inside with dense white hairs throughout, outside glabrous except along margins, prickles absent. Petals 5, deciduous, elliptical to obovate, not clawed, 9–11 × 5–8 mm, with sparse hairs on both surfaces, white. Stamens 100–200, glabrous; filaments up to 3.5 mm long, anthers c. 0.5 mm long. Carpels 400–600, glabrous; glands shortly stalked, 1–5 per carpel, or absent from some carpels; ovaries c. 0.8 mm long, styles c. 1.5 mm long. Carpels extending to base of torus, annulus of hairs present at base of torus. Aggregate fruit ovoid to cylindrical, 12–15 mm long and 8–12 mm in diameter when dried, c. 18 mm long and c. 13 mm in diameter when fresh, exocarp red at maturity. Endocarpids ellipsoidal, lacunose, c. 1.4 × 1.0 × 0.4 mm. **Fig. 1.**

Specimens examined: **Queensland**. Cook District: 1.2 km before W Spencer Ck Forestry Camp, SF 144, Mt Windsor Tableland, Nov 1988, *Jessup* GJM1349 et al. (BRI); SF 144, Mt Windsor Tableland, Jul 1995, *Forster* PIF17268 & *Figg* (BRI, QRS); Leichhardt Logging Area, Timber Reserve 66, 13 km along Mt Lewis road, Jun 1995, *Forster* PIF16800 (BRI, K, L, MEL, MO, NSW, QRS); Mt Lewis road, 9 km W of the junction with the main highway, Aug 1990, *Luckow* 3804 (BH, QRS); Mt Lewis, Aug 1979, *Clarkson* 2491 (BRI); Baldy Mountain, S.F. 194, Jun 1995, *Forster* PIF16788 (BRI, MEL, NSW, QRS); Gadgarra, Atherton Tableland, Jul 1929, *Kajewski* 1146 (BRI); near Mt Haig, Tinaroo Creek road, 4.5 km NNW of Danbulla, Nov 1979, *Clarkson* 2723 (BRI); Lamb Range c. 6 km N of Danbulla forestry camp, Nov 1979, *Clarkson* 2729 (BRI); Tinaroo Range, Noel LA, north of Tinaroo Falls dam, Nov 1981, *Kanis* 2151 (BRI); EP14, Python L.A., S.F.R. 185, Danbulla, Aug 1976, *Stocker* 1506 (QRS); S.F.R. 194, Parish of Western, Oct 1991, *Gray* 5330 (QRS); McGuire property, P.E.I. Road, Glen Allyn, Sep 1992, *Cooper & Cooper* 374 (QRS); Crater N.P. margin, Jun 1991, *Elick* 99 (QRS); Palmerston Highway near Beatrice River crossing, Nov 1979, *Clarkson* 2732 (BRI). North Kennedy District: Mt Fox, Nov 1949, *Clemens* s.n. (BRI).

***Distribution and habitat*:** *Rubus queenslandicus* is endemic to north Queensland from Windsor Tableland to Mt Fox, with most specimens collected from the Atherton Tableland (**Map 4**). Altitudes range between 680–1200 metres. *R. queenslandicus* grows on rainforest margins or in disturbed rainforest, in areas with an annual rainfall greater than about 1500 mm.

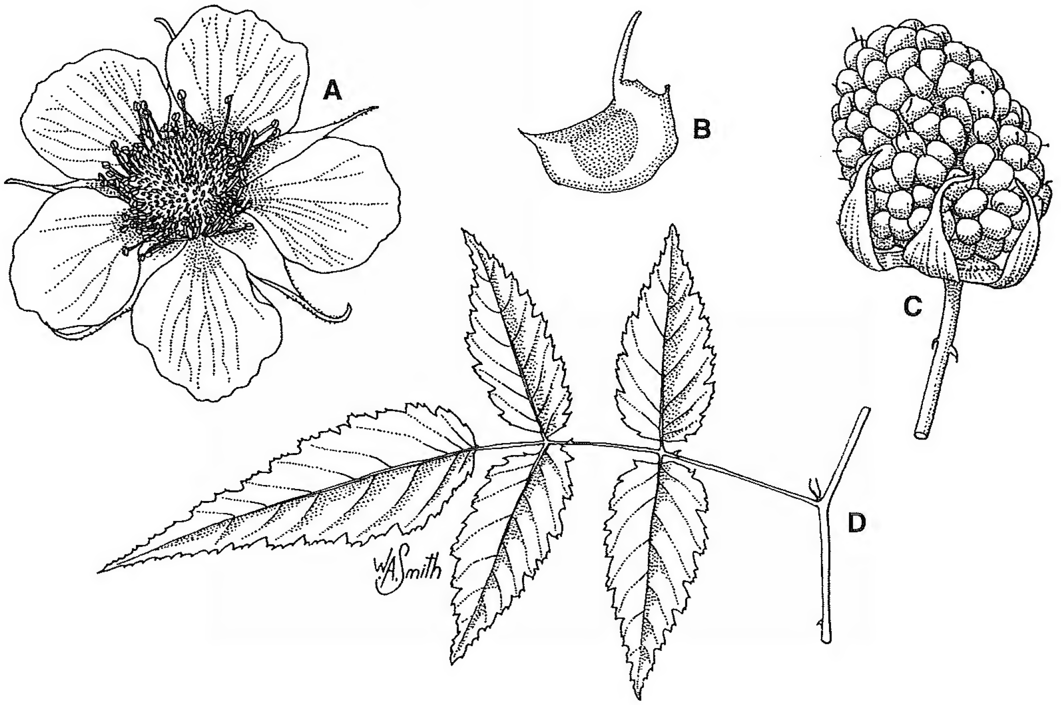


Fig. 1. *Rubus queenslandicus*: A. flower × 2. B. carpid × 8, showing style and gland. C. aggregate fruit × 2. D. leaf × 0.6. A–B, Forster PIF16788; C, Forster PIF16792; D, Forster PIF16800.

***Phenology*:** Flowers have been recorded between June and November; fruits from between August and November.

***Affinities*:** *R. queenslandicus* is closely related to *R. rosifolius* but differs from that by its glabrous stems and glabrous or sparsely hairy leaves, petiolules of lateral leaflets 1–3 mm long (0–1 mm long for *R. rosifolius*), sparse sessile glands on leaves (dense for *R. rosifolius*) and petals hairy on both surfaces (hairy on outer surface only for *R. rosifolius*). *R. queenslandicus* differs from *R. probus* by its glandular carpels (non-glandular for *R. probus*), up to 6 flowered inflorescences (up to 30 flowered for *R. probus*), and narrower leaflets.

R. queenslandicus differs from *R. chrysogaeus* by its leaflets with 8–9 pairs of lateral veins (12–13 pairs for *R. chrysogaeus*) and fruits with 1–5 glands per carpel (5–30 glands per carpel for *R. chrysogaeus*).

Conservation status: Locally common, and not rare or endangered.

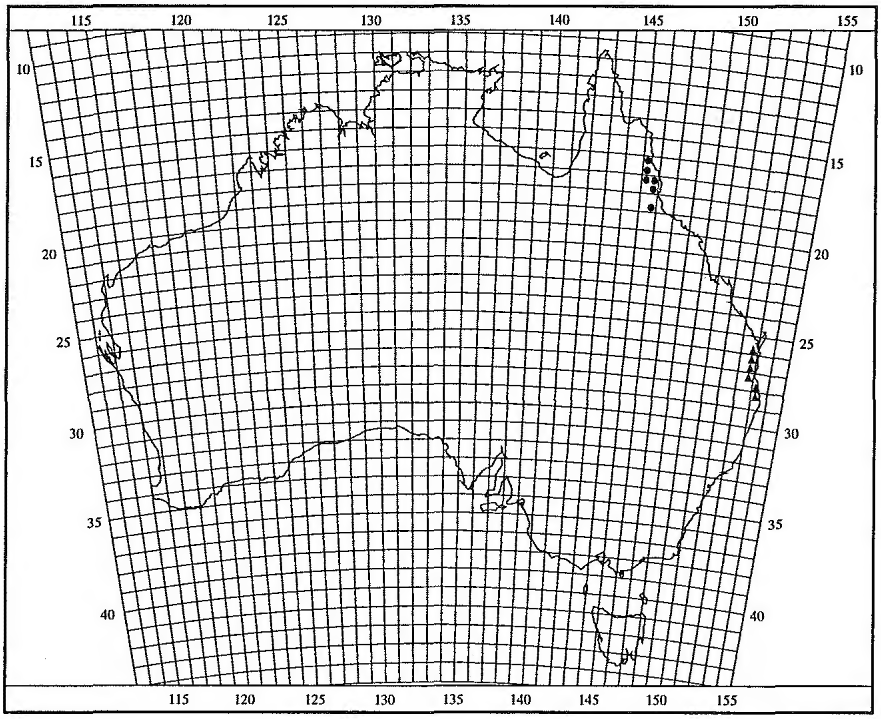
Etymology: The specific epithet refers to the Australian state of Queensland where the species is endemic.

4. **Rubus ellipticus** Sm. in Rees, Cycl. 30: no.16 (1815). **Type:** Nepal, April 1802, *F. Buchanan* s.n. (holo: LINN (Smith herb. no. 902.71), BRI microfiche).

Erect shrubs with arching canes, up to 2.5 m high. Stems hairy, with stout, curved prickles to 4 mm long, and with a dense covering of stiff reddish bristles, to 4 mm long. Leaves up to 125 mm long and trifoliolate on canes, but sometimes unifoliolate adjacent to inflorescence. Petioles 27–40 mm long, terete, hairy, with a few stout prickles, reddish bristles present. Rachis hairy, reddish bristles present. Petiolules of lateral leaflets 1.5–3 mm long, terete, hairy; petiolules of terminal leaflets 9–25 mm long, terete, hairy. Stipules rather deciduous, linear, 4.5–8 mm long, c. 0.3 mm wide, entire; apex acute, attached to petiole 1–2.5 mm above petiole base. Blades of lateral leaflets ovate to elliptical, 19–45 × 18–32 mm, the terminal leaflet often larger than the lateral ones, 33–68 × 27–45 mm; sparsely hairy on upper surface, densely tomentose below, base broadly cuneate or obtuse, not oblique in lateral leaflets; apex obtuse or rarely acute; margins uniserrate, with serrations 1–1.5 mm deep; glands absent. Leaflets penninerved with 7–9 pairs of lateral veins, terminating at a major tooth; venation reticulate, midrib and lateral veins impressed above, raised below, prickles occasionally present. Inflorescence terminal or in upper leaf axils, up to 50 mm long, with up to 16 flowers. Bracts entire or tripartite, to 7 mm long, segments linear, acute. Pedicels terete, 5–12 mm long, hairy, glands absent, reddish bristles present. Flower buds globular, hypanthia shallowly convex to almost flat, hairy, unarmed, reddish bristles present, glands absent. Sepals persistent, ovate, 4.5–5.5 × 3–5 mm, without an acumen, entire, not recurved after anthesis; both surfaces with dense white hairs throughout, prickles absent, reddish bristles present. Petals 5, deciduous, elliptical, not clawed, 7–10 × 5–8 mm, hairy, white. Stamens 110–190, glabrous; filaments up to 4 mm long, lorate; anthers c. 0.7 mm long. Carpels c. 120, hairy, glands absent; ovaries c. 0.8 mm long, styles c. 2.5 mm long. Carpels extending to base of torus, whole of torus hairy. Aggregate fruit oblate to globular, c. 9 mm long and 10 mm diameter when dried, c. 9 mm long and 12 mm diameter when fresh, exocarp yellow at maturity. Endocarpids ellipsoidal, lacunose, c. 1.7 × 1.2 × 0.8 mm.

***Specimens examined*:** **Queensland.** WIDE BAY DISTRICT: Maryborough, Fairley Estate, Nov 1948, *Clemens* s.n. (BRI); East Deep Creek, via Gympie, Sep 1964, *Setchell* s.n. (BRI); Imbil, Jan 1962, *Brimblecombe* s.n. (BRI); Mothar Mountain SF, south-east of Gympie, Oct 1993, *Bean* 6817 (BRI); Noosa shire, Nov 1920, *Edwards* s.n. (BRI); near Mapleton, Jul 1952, *Blake* 18957 (BRI); Flaxton, Montville, Dec 1955, *Bundesen* s.n. (BRI); Obi Obi Creek, Baroon Pocket, 3 km SW of Montville, Aug 1983, *Sharpe* 3353 (BRI); Cork Pocket road, 8 km west of Maleny, Jul 1993, *Bean* 6239 (BRI, NSW); Obi Obi Ck weir, 2 km SW of Maleny, Jun 1995, *Bean* 8714 (BRI, MEL, NSW). MORETON DISTRICT: Eumundi, Jun 1912, *White* s.n. (BRI); between Nambour and Mapleton, c. 95 km N of Brisbane, Nov 1956, *Eichler* 13161 (AD, BRI); Blackall Range, Dec 1916, *White* s.n. (BRI); Montville, Jul 1954, *Mann* s.n. (BRI); Upper Cedar Ck, Mt Glorious, Aug 1985, *Batianoff* 4885A (BRI, NSW, SP, US); Upper Brookfield near Brisbane, Jun 1926, *White* s.n. (BRI); Mt Cotton, Dec 1977, *Fisch* s.n. (BRI); Hotham Creek, 2 km S of Pacific Highway near Pimpama, Jul 1995, *Bean* 8733 (BRI, MEL, NSW); Upper Coomera, Jul 1959, *Marshall* s.n. (BRI). **New South Wales.** NORTH COAST: Norville's property, Bilambil, Jul 1978, *Floyd* 993 (BRI).

***Distribution and habitat*:** *Rubus ellipticus* is indigenous to south-east Asia including India, Sri Lanka, Burma, Thailand, Laos, Vietnam, China and the Philippines (Zandee & Kalkman 1981). In Australia, it is naturalised in coastal



Map 4. Distribution of *Rubus queenslandicus* •, *Rubus ellipticus* ▲.

areas of southern Queensland and northern New South Wales (**Map 4**). It grows in high rainfall areas with fertile soil, on rainforest margins or in cleared or disturbed areas which formerly supported rainforest.

***Phenology*:** Flowers have been recorded from July-October, with one record in January. Fruits are recorded from July to December.

***Note*:** *R. ellipticus* was first introduced into Australia under the name *R. flavus* in 1891, in the form of seeds received from the Botanical Gardens, Saharanpur, India (Soutter 1892). Plants were propagated in Brisbane and distributed to various parts of Queensland. It was first recorded as naturalised in 1912 at Eumundi, Queensland. While populations are now known up to 100 km north and 200 km south of this point, the species is nowhere common except along the Blackall Range, to the south-west of Eumundi.

***Affinities*:** *R. ellipticus* is a distinctive species quite unlike any indigenous Australian species. It is readily distinguished from them by its elliptical leaflets and long red bristles on the stems and petioles, and yellow fruits.

5. R. parvifolius L., Sp. Pl. 1197 (1753). **Type:** China. near Canton, undated, *Osbeck* s.n. (LINN n.v., BRI microfiche).

Rubus macropodus Ser. in DC., Prodr. 2: 557 (1825). **Type:** New South Wales. 'in Botany Bay', n.v.

[*Rubus ribesifolius* Sieber No. 192, nomen nudum]

Rubus zahlbrucknerianus Endl., Atakta bot. t. 35 (1835). **Type:** the illustration.

Rubus boormanii Gand., Bull. Soc. Bot. France 65: 25 (1918). **Type:**New South Wales. Awaba, Oct 1899, *J.L. Boorman* s.n. (holo: LY n.v.; iso: NSW).

Rubus simsonianus Gand., Bull. Soc. Bot. France 65: 25 (1918). **Type:**Tasmania. Oceania, in 1875, *Simson* s.n. (holo: LY n.v., photo at NSW).

Rubus tasmanicus Gand., Bull. Soc. Bot. France 65: 25 (1918). **Type:** Tasmania. Oceania, in 1875, *Simson* s.n. (holo: LY n.v., photo at NSW).

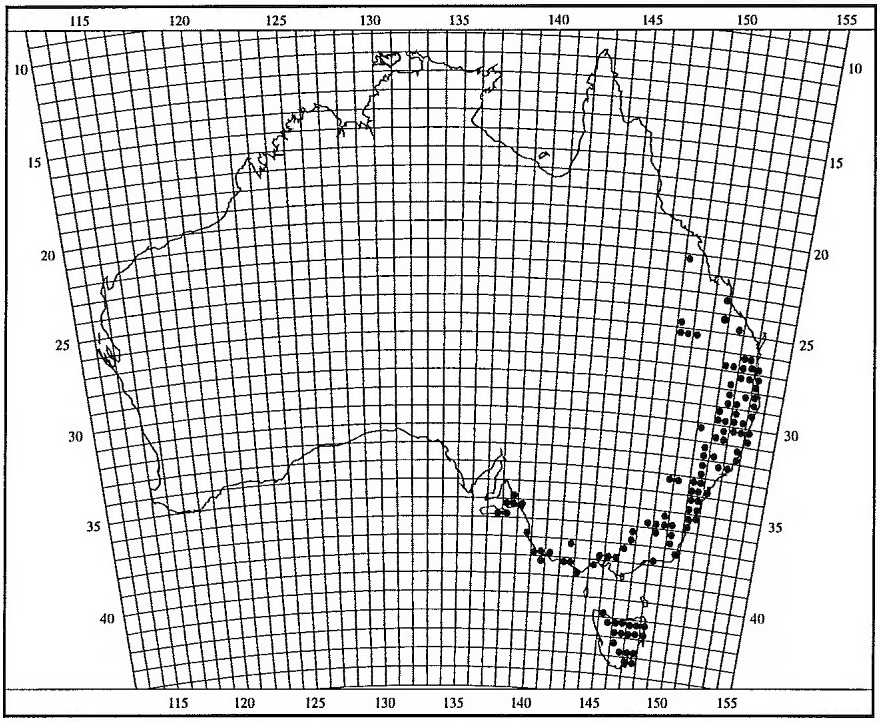
Rubus walterianus Gand., Bull. Soc. Bot. France 65: 25 (1918). **Type:** Victoria. Wandong Ranges, in 1898, *C. Walter* s.n. (holo: LY n.v., photo at NSW).

Illustrations: Cochrane et al., Fl. & Plants of Victoria & Tasmania p. 87 (1980); B.A. Auld & R.W. Medd, Weeds - An Illust. Bot. Guide to the weeds of Austral. p. 218 (1987); D.L. Jones & B. Gray, Climbing Pl. in Austral. t. 333 (1988), Harden (ed.), Fl. of N.S.W. 1: plate 32 (1990).

Prostrate to semi-scandent shrubs, up to 0.5 m high. Stems hairy, with stout, curved to almost straight prickles to 3.5 mm long. Leaves of mature stems up to 75 mm long, imparipinnate, mostly with 3 or 5 leaflets on canes, but with unifoliolate leaves on juvenile material or adjacent to inflorescence. Petioles 11–30 mm long, grooved on upper surface, hairy, with a few stout prickles. Rachis hairy. Petiolules of lateral leaflets 0–2 mm long, grooved, hairy; petiolules of terminal leaflets 1–19 mm long, grooved above, hairy. Stipules persistent, linear, 5.5–12 mm long, c. 0.6 mm wide, entire or with short acuminate lobes; apex acute, attached to petiole 1–2.5 mm above petiole base. Blades of lateral leaflets ovate to rhomboidal, 10–26 × 7–22 mm, the terminal leaflet distinctly larger than the lateral ones, 19–40 × 17–42 mm; sparsely hairy on adaxial surface, densely tomentose on abaxial surface; base broadly cuneate or obtuse, sometimes oblique in lateral leaflets; apex acute to obtuse; margins biserrate, with serrations 1–5 mm deep; glands absent. Leaflets penninerved with 3–5 pairs of lateral veins, terminating at a major tooth; venation reticulate, midrib and lateral veins impressed above, raised below, prickles occasionally present. Inflorescence terminal or in upper leaf axils, up to 50 mm long, with up to 7 flowers. Bracts and bracteoles tripartite, to 6 mm long, segments linear, acute. Pedicels terete, 12–33 mm long, hairy, glands absent. Flower buds deltoid, hypanthia shallowly convex to almost flat, hairy, prickles present, glands absent or rarely stalked glands present. Sepals persistent, deltate, 8–14 × 3–5 mm, including a 0–3 mm long acumen, entire or with small lateral lobes, recurved after anthesis; inside and outside with dense white hairs throughout, prickles present. Petals 5, deciduous, orbicular to obovate, clawed, 4–6.5 × 3–5 mm, with sparse erect hairs on both surfaces, pink to red. Stamens 60–75, glabrous; filaments up to 5 mm long, anthers c. 0.6 mm long. Carpels 26–38, glabrous or hairy, glands absent; ovaries c. 0.8 mm long, styles c. 4.5 mm long. Carpels extending to base of torus, torus glabrous. Aggregate fruit ellipsoidal to globular, c. 12 mm long and 10 mm diameter when dried, c. 14 mm long and 12 mm diameter when fresh, exocarp red at maturity. Endocarpids ellipsoidal, lacunose, 2.5–3.3 × c. 1.5 × c. 1.5 mm.

***Selected specimens*:** **Queensland.** South Kennedy District: Swampy Ridge, W of Eungella township, May 1992, *Bean* 4464 (BRI). Leichhardt District: Dawson River, 61 km N of Injune, Nov 1993, *Bean* 6858 (BRI, CANB). Port Curtis District: Kroombit SF 316, 45 km SW of Calliope, Oct 1988, *Gibson* TOI391 (BRI); Mt Archer, Rockhampton, Feb 1980, *Stanley* 595 (BRI). Burnett District: Boyne River, c. 15 mls [24 km] W of Kingaroy, Oct 1954, *Johnson & Pedley* (BRI). Wide Bay District: Hasthorpe road, 2 km E of Kandanga, Nov 1993, *Bean* 7101 (BRI, MEL, NSW). Darling Downs District: 32 km NE of Jandowae on 'Russell Park', Nov 1973, *Barben* s.n. (BRI). Moreton District: Serpentine Creek, c. 11 km NE of Brisbane, Sep 1972, *Durrington* 470 (BRI); c. 8 km S of Boonah, Nov 1972, *Carmichael* s.n. (BRI). **New South Wales.** North Western Slopes: Oxley Park, Tamworth, Nov 1985, *Hosking* s.n. (NSW). Northern Tablelands: Little Llangothlin Lake Nature Reserve, NNE of Guyra, Jan 1995, *Bean* 8280 (BRI, NSW). North Coast: Coopernook SF near Taree, Mar 1936, *Bailey* 16 (BRI). Central Western Slopes: Manildra, Nov 1906, *Boorman* s.n. (NSW). Central Tablelands: Jenolan Caves, Nov 1899, *Blakely* s.n. (NSW). Central Coast: 1 km SW of Minamurra, May 1977, *Pickard* 3483 (NSW). South Western Slopes: Lankey's Creek, Jan 1947, *McBarron* 311 (NSW). Southern Tablelands: Nimmitabel, Feb 1908, *Cambage* 1849 (NSW); Thredbo escarpment beyond Prussian Ck, Kosciusko NP, Feb 1980, *Thompson* 4011 (NSW). South Coast: Bombala River, c. 17 km NE of Bibbenluke, Dec 1987, *Crawford* 783 (CANB, MEL). **Australian Capital Territory.** Midway between Mt Ginini and Mt Gingera, Feb 1975, *Orchard* 4519 (AD). **South Australia.** Strangway waterfalls, c. 15 km NW of Victor Harbour, Dec 1958, *Schodde* 1043 (AD, CANB, K, P); 6 mls [10 km] SE of Cape Banks, near Lake Bonney, Feb 1945, *Cleland* s.n. (AD); Dudley Peninsula, Kangaroo Island, Nov 1883, *Tate* s.n. (AD). **Victoria.** 1 km NW of Princetown, Dec 1992, *Clarke* 2183 (AD, CANB, MEL, NSW); Hopkins Falls, Warrnambool district, Dec 1981, *Corrick* 7920 (HO, MEL); Wabonga Plateau State Park, Jan 1987, *Piesse* 719 (MEL). **Tasmania.** Barkers Beach, Dec 1984, *Collier* 79 (HO, MEL); Lyell Highway near west turnoff to Tarraleah, Feb 1981, *Orchard* 5352 (AD, HO, MEL, NSW); Somerset, Feb 1948, *Curtis* s.n. (HO); Eaglehawk Neck, Jan 1928, *Cleland* s.n. (AD).

***Distribution and habitat*:** *R. parvifolius* is widely distributed in south-eastern Australia from central Queensland (west of Mackay) to



Map 5. Distribution of *Rubus parvifolius.*

Tasmania, including eastern New South Wales, the Australian Capital Territory, southern Victoria, and south-eastern South Australia (**Map 5**). Outside Australia, it occurs in Japan, China, Taiwan and northern Vietnam. In Australia, it inhabits open forests and woodlands dominated by *Eucalyptus* spp., over a broad climatic range and on a wide range of soil types.

***Phenology*:** Flowers have been recorded for all months of the year; fruits have been recorded from November to April.

***Affinities*:** *R. parvifolius* differs significantly from all other Australian members of *R.*subg. *Idaeobatus* by its flowers with comparatively few carpels and stamens, the dense woolly tomentum on the undersides of the leaflets, and the lack of glands on any part of the plant. In these features, it is close to *Rubus moluccanus* of *R.* subg. *Malachobatus*.

The name *Rubus macropodus* was used for Australian populations in the first half of the 19th century, until it was placed in synonymy with *R. parvifolius* L. by Bentham (1864). Asian specimens have flowers with hairy carpels. In most cases, Australian plants have flowers with glabrous carpels, but they are occasionally hairy.

***Typification*:** No type specimen for *R. macropodus* could be located at G, where Stafleu and Cowan (1985) indicated Seringe's types for De Candolle's Prodromus are located. Potential type specimens were also sought from BM, G–DC, K, L, LY, P and W, but without success.

***Conservation status*:** *R. parvifolius* is widespread and common.

Acknowledgements

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References

BAILEY, F.M. (1884). Contributions to the Queensland Flora. *Proceedings of the Royal Society of Queensland* 1: 8–19.

BAKER, J.G. (1877). *Flora of Mauritius and the Seychelles*. London: L. Reeve & Co.

BEAN, A.R. (1995). A Revision of *Rubus* subgenus *Micranthobatus* (Focke) Kalkman (Rosaceae) in Australia. *Austrobaileya* 4: 321–8.

BENTHAM, G. (1864). *Rubus*. In *Flora Australiensis* 2: 429–32. London: L. Reeve & Co.

CORRIE, L.G. (1907). *Queensland Acclimatisation Society*, 44th Annual Report. Brisbane: H. Pole & Co.

EWART, A.J. (1931). *Flora of Victoria*. Melbourne: Government Printer.

FOCKE, W.O. (1910). *Species Ruborum. Monographiae Generis Rubi Prodromus part 1*. Stuttgart: Nagele & Dr. Sproesser.

GREUTER, W., chm. (1994). International Code of Botanical Nomenclature adopted by the Fifteenth International Botanical Congress, Yokohama, August-September 1993. Konigstein, Germany: Koeltz Scientific Books.

HENDERSON, R.J.F. (ed.) (1994). *Queensland Vascular Plants, Names and Distribution*. Brisbane: Queensland Department of Environment and Heritage.

SOUTTER, W. (1892). *Queensland Acclimatisation Society*, 29th Annual Report. Brisbane: Pole, Outridge & Co.

STAFLEU, F.A. & COWAN, R.S. (1985). *Taxonomic Literature Volume 5, Sal-Ste*. Utrecht: Bohn, Scheltema & Holkema.

STANLEY, T.D. & ROSS, E.M. (1983). *Flora of South-eastern Queensland, Volume 1*. Brisbane: Queensland Department of Primary Industries.

ZANDEE, M. & KALKMAN, C. (1981). The genus *Rubus* (Rosaceae) in Malesia 1. Subgenera *Chamaebatus* and *Idaeobatus*. *Blumea* 27: 75–113.